Methods: The KSS, WOMAC, and SF-36 questionnaires were administered before TKA in a total of 804 consecutive patients. All patients gave informed consent to participate in this study. Six-hundred and twenty-one women (77.2%) and 183 men (22.8%) with a mean age of 71.3 ± 7.9 years (range 43 to 90 years) were enrolled in this investigation. Score in each dimensions of the questionnaires were considered quantitative variables following a normal distribution. The correlational analysis was conducted with the Pearson's coefficient with an alpha level set at 0.05. Statistical analyses were performed with SPSS v.15.0.
Results: All correlations between questionnaires were statistically significant ($p < 0.05$). There was a weak negative correlation (dimensions ranging from −0.106 to −0.277) between the specific KSS and WOMAC scales. The SF-36 and KSS scales showed a weak positive correlation (dimensions ranging from 0.071 to 0.278) whereas the SF-36 and WOMAC scales were found to have a moderately stronger correlation with dimensions ranging from −0.148 to −0.593. The strongest correlations were found between knee pain subscale of SF-36 and function subscale (−0.568) and total score of WOMAC (-0.593). The weakest correlation was found between pain subscale of KSS and total score of WOMAC.
Conclusions: The principal finding of this investigation was the absence of strong correlations between the assessed questionnaires. Differences in the administration method may explain weak correlations. In fact, pain scores were strongly correlated between questionnaires employing same (WOMAC and SF-36, both self-administrated) compared to different administration methods (the investigator-dependent administration of KSS and the self-administrated WOMAC). This may also explain the poor correlation existing between both specific questionnaires (KSS and WOMAC). The weak correlation between the specific KSS and the generic SF-36 questionnaires may be additionally explained by the fact that different variables are assessed.
In conclusion, this study shows that these three questionnaires must be administered before TKA surgery. Each one of them can give a different important information in pre-operative process.

SCP11-1236
Activities related to deep flexion and patient satisfaction after high-flexion TKA
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Objectives: There is a concern whether deep flexion after total knee arthroplasty (TKA) will increase certain complications or whether it will cause early damage to the component of TKA. Purposes of this study were to evaluate (1) the percentage of patients who could perform high-flexion activities, (2) correlation between the ability of high-flexion activities and maximal knee flexion angle, (3) correlation between maximal knee flexion angle and the patient satisfaction or improvement in quality of life (QOL), and (4) correlation between the ability of high-flexion activities and patient satisfaction or improvement of QOL after high-flexion TKA.
Methods: Two hundred fifty-one patients out of 313 consecutive patients who underwent TKAs with high-flexion design prosthesis for primary osteoarthritis by a single surgeon and had been followed up for more than two years were prospectively evaluated. Functional assessment allowed for the estimation of the ability of high-flexion activities including kneeling, squatting, sitting cross-legged and standing from floor, and the questionnaire as to patient satisfaction and improvement of QOL after TKA. Clinical assessment was based on the active non-weight bearing maximal knee flexion angle at the final follow-up, and Hospital for Special Surgery (HSS) score, American Knee Society (AKS) score, and Western Ontario and McMaster University Osteoarthritis (WOMAC) index were also assessed. Correlations among the ability of high-flexion activities, patient satisfaction, improvement of QOL and maximal knee flexion angle were evaluated.
Results: Patients who could kneel, squat, sit cross-legged and stand from floor were 71.7, 77.7, 80.9 and 95.0%, respectively. Kneeling, squatting and sitting cross-legged significantly correlated with maximal knee flexion angle, but standing from floor did not. Significant correlation between maximal knee flexion angle and patient satisfaction as well as QOL was observed ($p = 0.005$ and $p = 0.013$). Abilities of kneeling, squatting and sitting cross-legged correlated with patient satisfaction and improvement of QOL ($p < 0.001$).
Conclusions: Patients who could perform high-flexion activities in this series could get more satisfaction and perceive more improvement in their QOL with high-flexion TKA.

SCP11-1269
Relationship between rotational and coronal deformity in varus osteoarthritis (OA) of the knee
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Objectives: Little quantitative data have been available regarding the presence of the rotational deformity in osteoarthritic knees and its relationship with varus deformity in coronal plane is not clear. We compared the relative position of the femur and tibia between normal and osteoarthritic knees, and evaluated relationship between rotational and coronal alignment to investigate whether knees with varus OA have a rotational deformity and whether this deformity increases with progressive OA.
Methods: Seven rotational and three coronal angles defined for alignments in the femur and tibia were measured in 50 normal and 100 osteoarthritic knees using reconstructed 3D images converted from CT. We compared 10 angles between in normal with OA patients and analyzed the relationship between rotational and coronal angles in OA.
Results: The rotational deformities in distal femoral and distal tibia had a significant relationship with coronal alignments in OA, but not in normal knees. The angle between posterior condylar line and surgical epicondylar axis had a linear correlation with lateral distal femoral angle ($p = 0.005$) and tibiofemoral angle ($p = 0.003$) in OA. The external rotation of the distal tibia relative to the distal femur decreased as the lateral distal femoral angle increased ($p = 0.002, r = -0.305$). Also, there were significant differences between normal and OA knees in all 10 angles including the internal rotation of the proximal and distal tibia relative to the distal femur. The axis tangent to the proximal tibia was 0.4° internally rotated in OA but 4.9° externally rotated in normal knee relative to the distal femur ($p < 0.001$). Transmalleolar axis was also 18.6° externally rotated in OA but 28.3° externally rotated in normal knee ($p < 0.001$).
Conclusions: The results demonstrated the internally rotated deformities in distal femur and tibia caused by OA had the relationship with varus changes in the coronal alignment. We believe the data will help us to give the biomechanical informations to minimize the possibility of malalignment in total knee arthroplasty and surgeons should give careful attention to rotational deformity in severe varus TKA and wide range of rotational profile.

SCP11-1290
An in vitro study of knee kinematics: native versus bi-compartmental, PCL retaining and posterior stabilized implants
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Objectives: Reproducing normal knee kinematics is an important goal of knee arthroplasty. Knee replacements that keep the cruciate ligaments intact should perform better in this respect than PCL retaining (CR) and posterior stabilized (PS) knee implants. However, this hypothesis has not been confirmed before. In this study, we evaluated and compared passive and loaded kinematics of human knee joints before and after consecutive replacement with bi-compartmental, CR and PS implants.
Methods: Six fresh frozen human cadaveric specimens received bone mounted frames with reflective markers on femur, tibia and patella. They were CT scanned, the anatomical landmarks were identified and their locations relative to the frame markers were determined. The specimens were then mounted on a knee simulator and their kinematics during passive

motion and loaded squats were measured using a Stereophotogrammetric Vicon system. The loaded squats were performed with a constant ankle load, variable quadriceps load and constant hamstring forces. After the experiments on the native knee, the medial tibio-femoral and patello-femoral surfaces were replaced with a bi-compartmental implant and the tests were repeated. Finally, a CR and then a PS prosthesis were consecutively implanted and tested using the same loading conditions. For all experiments, measured kinematics were described using the Grood and Suntay system. Tibial axial rotation and AP translations of the femoral condyle centres with respect to the tibia were compared in the four configurations.

Results: Passive motions of the knee with a bi-compartmental implant were similar to those recorded for the native knees, while CR and PS designs showed less internal rotation. During loaded squats, internal rotation in the native knee was significantly reduced and kinematics of all implants were closer to the kinematics of native knees as compared to those produced during passive conditions.

Conclusions: A bi-compartmental implant which allows all ligaments to stay intact provided kinematics closer to the native knee than CR and PS implants under active loading.

SCP11-1294

Comparison of lateral and medial amc uniglide unicompartmental knee replacement at two year

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Objectives: Lateral unicompartmental knee replacement (UKR) is generally thought to have a worse outcome than medial UKR. The aim of this study was to compare the early patient subjective outcome scores (at 2 year post-op) of lateral UKRs with medial UKRs using, the Uniglide knee implant.

Methods: Between 2003 and 2008, 46 lateral fixed-bearing Uniglide UKRs were performed at our unit. The American Knee Society (AKS), Oxford and WOMAC scores were recorded pre-operatively and at one and 2 years post-op. They were compared with the results of 142 medial mobile-bearing and 115 medial fixed-bearing UKRs performed over the same time period using the same Uniglide prosthesis.

Results: The mean ages of the patients were: lateral group 63 years, medial mobile-bearing group 66 years and medial fixed-bearing group 72 years. There was no difference between the three groups' pre-operative scores.

At one-year review, the outcome scores for the lateral UKR were better than both medial fixed-bearing UKR and medial-mobile bearing UKR. The median pain scores (as measured in the AKS Knee and by the WOMAC scores) also showed the lateral UKRs to be slightly better. All three groups achieved a median flexion of greater than 125°.

At two year review which was available for 26 lateral UKR, 96 medial mobile UKR and 41 medial fixed UKR the difference was maintained with all three groups showing further improvement in their scores.

Conclusions: This study suggests that, the early outcome of lateral UKRs is better rather than worse than both fixed and mobile bearing-medial UKRs.

SCP11-1338

MR assessment of focal cartilage defects using a high resolution imaging protocol with planes perpendicular to the defect: preliminary results

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Objectives: Non-invasive Magnetic resonance (MR) imaging of cartialge lesions,in particular the optimal protocol and precise assessment of the extent for focal cartilage lesions remains challenging with limited sensitivity and specify.

Goal of the study was to assess diagnostic efficiency to detect focal cartilage lesions of a MR protocol in comparison to arthroscopy using: (1) a high resolution PD (Proton-Density) TSE sequence with fat saturation in two directions (sagittal/coronal) for detection of the lesion, and (2) an additional non fat saturation TSE in two planes perpendicular to the defect, which gives information on the extent of the lesions.

Methods: The patients were included in an ongoing RCT on cartilage repair according to disabling knee problems due to a focal femoral condyle cartilage lesion assessed by arthroscopy, reflected in Lysholm score less than 75. Further inclusion criteria were no major malalignment or knee ligament injury and age range between 18–50 years. 32 patients are included and the last eleven patients were subjected to evaluation by MRI. Mean age was 31 (range 19–44) and mean knee symptoms duration was 61 months (range 15–216). MRI was performed at a 1.5T system using a dedicated 15 channel knee coil. A straight coronal and sagittal intermediate weighted TSE (Turbo-Spin-Echo) with fat saturation (TR 3652 ms, TE 51 ms, 3 mm slice thickness, 384x384 image matrix) was used to detect the cartilage lesions. A high-resolution sagittal and coronal proton-density weighted TSE sequence (TR 3690 ms, TE 29 ms, 2.5 mm slice thickness, 448x448 imaging matrix) was obtained afterwards perpendicular to the defect. This is summarized in Fig. 1. MR assessment of the defect location on the fat saturation sequences and size (length and width) on the high-resolution perpendicular sequence was performed by a reader blinded to the arthroscopic analysis. Arthroscopic findings were consider as the golden standard of the detected cartilage lesions. MRI results on the defect size (width x length) were compared to arthroscopy by Wilcoxon signed ranks test and correlated to the arthroscopic findings using bivariate Pearson correlation.

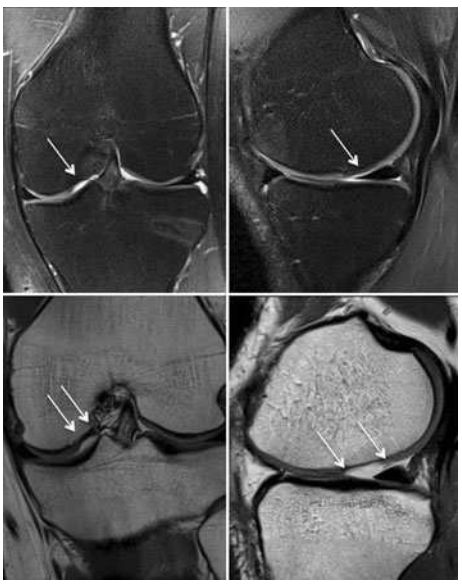

Fig. 1. Upper row: Intermediate weighted fat saturation images with detection of the defect (fluid contrast). Lower row: High resolution images perpendicular to the defect for assessment of size

Results: These 11 patients had an arthroscopic sizing of the cartilage lesion (ICRS grade 3 & 4) of mean 2.3 cm^2 (range 1–4.9 cm^2) and the defect was most commonly located on the medial femoral condyle (9/11). MRI detected all 11 arthroscopic confirmed lesions at the corresponding condyle location and mean defect size in MRI was 1,3 cm^2(range 0,4–2.6 cm^2), significant smaller ($p = 0.013$). Mean length was 1.3 cm (range 0.6–2.1 cm) in MRI compared to 1.5 cm (range 1–2.1 cm) in arthroscopy ($p = 0.066$, non significant), mean width 0.97 cm (range 07–1.5 cm) in MRI compared to 1.34 cm (range 0.9–2,4 cm) ($p = 0.007$, significant). Correlation revealed a significant